

State Trauma Quality Improvement Plan

Rogelio Martinez, MPH

Pre-Injury

Pre-hospital

In-Patient Hospitalization

Post-Acute Care

Data Collection

Data Analysis

Quality Assurance

Injury prevention

Injury

Death
Disability

- Public protection
- EMS infrastructure
- Protocols
- Medical Direction
- Triage and transport guidelines

- Hospital guidelines, protocols, resources
- Triage and transport protocols (if applicable)

- Rehabilitation plans
- Community reintegration



Match the correct definition!!

Pr I A measurement technique that analyzes a series of actions to improve its effectiveness or efficiency

QI A system that improves the overall quality of a product or service

PI A system the improves the execution or accomplishment of its intended purpose.

QA A system that ensures a desired level of quality in the development, production, or delivery of a products and/or services.

- Quality Improvement
- Performance Improvement
- Quality Assurance
- Process Improvement

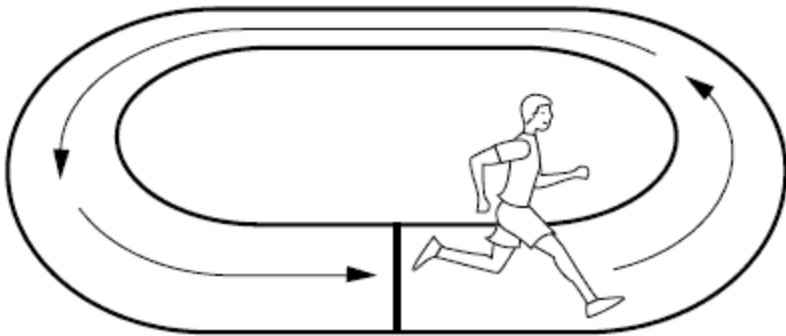
PI, QA, QI, Pr-I



QA



Pr- I



PI



QI



Process Improvement

Inputs → Processes → Outputs

Quality Assurance

Outcomes

- As a Trauma Center:

- What is my goal?
- How do I compare with others?
- What are my resources and processes?
- How can I effectively build on those?
- How can I ensure every action is of high quality?

State Initiatives

- Reduce Emergency Department (ED) Dwell Time
- Reduce the number of transfers after admissions
- Reduce the number of deaths occurring in non-trauma centers
- Increase hospital billing efficiency for trauma patients

ED Dwell Time

Selected patients with an ED Disposition of
“Transfer to Acute Care”

ED Exit Date/Time - ED/Hospital Arrival Date/Time

Performance Measure 1: Reduce ED Dwell Time

Table 1: ED dwell time by ISS by categorical classification

ED dwell time (hrs)	Overall		By Injury Severity Score					
			*Missing/NA/ND		ISS ≤15		ISS >15	
	N	%	N	%	N	%	N	%
<2 hours	185	25.23%	20	44.44%	137	24.64%	28	21.21%
≥2 hours	548	74.76%	25	55.55%	419	75.35%	104	78.78%
Total patients transferred	733	100.00%	45	100.00%	556	100.00%	132	100.00%

Table 2: Time distribution of ED dwell time

Median ED dwell time (hrs)		Count	25%	Median	75%	Max
	Overall	688	2	3.1	4	28
	By Injury Severity Score					
	ISS ≤15	556	2	3.2	4	28
	ISS >15	132	2	2.9	4	16

Goal	Primary Intervention	Secondary Intervention	Assignment	Frequency
Goal # 1: Reduce the average length of time that trauma patients spend in referring trauma center emergency departments before they are transferred to a Level I Trauma Center.	Develop transfer plans (not contracts) with more than one Level I Trauma Center.	Specify and maintain transfer protocols within the regional to define personnel, equipment, and mode of transportation. Identify provisions for alternative methods of transport if usual transport modality is unavailable.	Level IV TPM	ASAP
	Review the case file for all patients with ED dwell time > 2 hours.		Level IV TPM Level IV TMD	Continuous
		Initiate a discussion with the sending institution to evaluate and strategize opportunities for improvement.	All Level TC TPM's & TMD's	
	Track and monitor the documentation of key time frames.	Time EMS notified Time EMS arrived <u>Time transfer decision made</u> <u>Time patient left</u> Time receiving hospital accepted patient	Level IV TPM	Continuous
	Track and monitor the documentation of cause for delay in transport.	Document weather, EMS availability, transfer acceptance, CT, lab, blood products, etc.	Level IV TPM	Continuous

Transfers after Admission

Selected patients who were admitted

AND THEN HAD AN

ED Disposition of Transfer

Performance Measure 2: Reduce transfers after admission

Table 3: Transfers after admission by length of stay

Transfers after admission	N	%
Total patients	7	100.00%
Length of Stay (Days)		
<1 day	2	28.57%
1	4	57.14%
6	1	14.28%

+

Goal	Primary Intervention	Secondary Intervention	Assignment	Frequency
Goal # 2: Reduce the frequency that a trauma patient is transferred to another hospital after an initial admission to a Level IV Trauma Center.	Develop a written description of the type and nature of patients that can and cannot be admitted.	Review this tool with all trauma program members during monthly M & M meetings.	Level IV TPM Level IV TMD	ASAP and then monthly
	Review all case files for patients that were transferred after admission.		Level IV TPM Level IV TMD	Continuous
		Discuss the case with the sending institution to strategize opportunities for improvement.	Level I TPM Level I TMD	
	Admitting physician initiates a telephone consultation with a Level I Trauma Center surgeon on questionable cases.		Level IV TMD	As needed
		Develop a formal (or informal) telemedicine or telephone consultation relationship with the sending institution.	Level I TMD	

Deaths at Non-Trauma Centers

Selected severely injured patients who went to a
non-trauma center

AND

Died

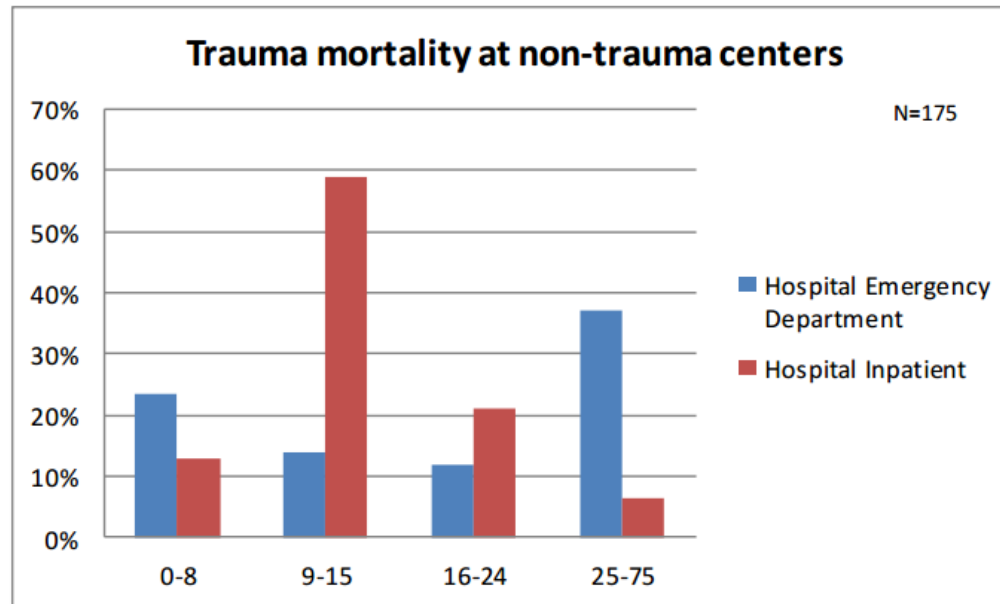


Table 4: Mortality at non-trauma centers by ISS

Mortality at non-trauma centers	Overall		Hospital Emergency Department		Hospital Inpatient	
	N	%	N	%	N	%
Total patients died	175	100.00%	51	29.14%	124	70.85%
By Injury Severity Score						
*Missing/NA/ND	8	4.57%	7	13.72%	1	0.80%
1-8	28	16.00%	12	23.52%	16	12.90%
9-15	80	45.71%	7	13.72%	73	58.87%
16-24	32	18.28%	6	11.76%	26	20.96%
25-75	27	15.42%	19	37.25%	8	6.45%

Table 5: Age demographics of deaths outside trauma centers

	N	%
Total Died	175	100.00%
<5	3	1.71%
9-14	1	0.57%
15-17	1	0.57%
18-24	3	1.71%
25-44	11	6.28%
45-64	30	17.14%
65+	126	72.00%

Table 6: Injury demographics of deaths outside trauma centers

	N	%
Traumatic Brain Injury	57	32.57%
Other head, face, neck	8	4.57%
Vertebral column injury	6	3.42%
Torso	24	13.71%
Upper extremity	1	0.57%
Lower extremity	67	38.28%
Other & unspecified	7	4.00%
System wide & late effects	5	2.85%

Table 7: Admission demographics of deaths outside trauma centers

	N	PctN
Source of admission		
Non-Health Care Facility Point of Origin	161	92.00%
Clinic or Physician's Office	1	0.57%
Transfer from a Hospital (different facility)	7	4.00%
Transfer from a Skilled Nursing Facility	4	2.28%
Transfer from another Health Care Facility	1	0.57%
Transfer from Hospice	1	0.57%

Goal	Primary Intervention	Secondary Intervention	Assignment	Frequency
Goal # 3: Reduce the frequency that trauma patients die in non-trauma centers.	Involve EMS in monthly M & M discussions.		Level IV TPM Level IV TMD	Monthly
	Ensure that local EMS agencies have access to trauma specific education.	EMS providers should have the following training: <ul style="list-style-type: none"> • EPIC for TBI • (PHTLS) • In-service on regional trauma destination protocols • In-service on special populations (elderly, young, TBI, anti-coagulation) 	EMS Agency Level I & IV TC EMS Regions CRH	At least annually
	Sponsor educational offerings for both EMS and trauma hospitals.			
	Produce region-specific reports on each of the four PI indicators and share them with the Regional EMS Councils.		Bureau	
	Explore adoption of trauma transport rules with the EMS Councils and MDC that take into consideration regional variation.		Bureau	
	Develop multidisciplinary trauma committees to evaluate Bureau reports.		EMS Regions	

Increase billing efficiency

Using ASTR we identified patients who had a trauma team activation AND arrived by ambulance in ASTR

VERSUS

The number of times the 068X revenue was reported to the Hospital Discharge Database

Table 7: Billing efficiency for level I trauma centers

4th Performance Measure: Billing efficiency	ASTR - Trauma Team Activation and Arrived by Ambulance	HDD # 068X Selected	Trauma Billing Efficiency Score
Aggregate Level I	18,104	15,579	86.05%

Table 7: Billing efficiency for level IV trauma centers

Billing efficiency	ASTR - Trauma Team Activation and Arrived by Ambulance	HDD # 068X Selected	Trauma Billing Efficiency Score
Aggregate Level IV	1,106	432	39.05%

Goal	Primary Intervention	Secondary Intervention	Assignment	Frequency
Goal # 4: Increase hospital billing efficiency for trauma patients.	Develop trauma team activation criteria.	Share with other hospital staff and EMS during monthly M & M meetings.	Level IV TPM Level IV TMD	ASAP and then monthly
	Review all charts to ensure proper documentation of trauma team activations.		Level IV TPM	Daily
	Meet with the Charge Auditor and CFO to review discrepancies between trauma records and billing records.		Level IV TPM Level IV TMD Level I TPM Level I TMD	Twice yearly
	Purchase membership in the Foundation for Trauma Care.		All TC's	ASAP
	Advertise and facilitate two Trauma Billing Best Practices webinars.		CRH	Annually
	Sponsor Rural Trauma Team Development courses at Critical Access Hospitals in Arizona.		CRH	Twice annually
	Hold Trauma System PI Meetings for TPM's		CRH Bureau	Three times per year